

**USDOT Volpe Center  
Southeast Baltimore Transportation Systems Study:**

**Recommendations**

**May 2005**

***DRAFT***

## Table of Contents

<b>Executive Summary .....</b>	<b>3</b>
<b>Overview .....</b>	<b>4</b>
<b>A. Intent .....</b>	<b>4</b>
<b>B. Analyses Behind the Recommendations .....</b>	<b>4</b>
<b>C. Context .....</b>	<b>4</b>
<b>Recommendations (by category) .....</b>	<b>6</b>
<b>A. Roads .....</b>	<b>6</b>
<b>B. Planning and Land Use .....</b>	<b>13</b>
<b>C. Government Relations .....</b>	<b>23</b>
<b>D. Parking .....</b>	<b>30</b>
<b>E. Alternative Transportation .....</b>	<b>40</b>

## *Executive Summary*

Baltimore City DOT requested USDOT's Volpe Center (Volpe) to study transportation issues in southeast Baltimore systematically in order to be able to identify a set of actions that is both comprehensive in nature and addresses specific local conditions. The recent rapid pace of development in the southeast has raised concerns among residents and businesses about the ability of the existing transportation infrastructure to handle the projected demands placed on it. Instead of focusing on any particular parcel in southeast, Volpe sought to identify issues in sub-areas (Fells Point, Inner Harbor East, Orleans Street, Canton, Patterson Park) and in the whole southeast, cutting across the sub-areas. In addition to the obvious concerns about development pressures on road capacity, issues that surfaced from multiple stakeholder meetings included traffic management, transit service, parking availability, enforcement of existing traffic and parking regulations, roadway conditions, and pedestrian and bicycle accessibility. Volpe analyzed the southeast transportation system by estimating recent past (2000), current (2004) and expected traffic conditions (2030) due to approved and likely development. For their potential use in Baltimore's southeast, Volpe also examined an array of policy tools already used elsewhere to help balance the supply of and demand for transportation infrastructure.

This report outlines specific short-term and long-term recommendations that, taken together, amount to a coordinated program for addressing the southeast's transportation issues and can serve as a template for examining similar issues in other parts of Baltimore. These recommendations include management tools that increase the effective capacity of existing infrastructure, investments in new infrastructure, and new or revamped policies. The recommendations fall into five categories:

- Roads,
- Planning/Land Use,
- Government Relations,
- Parking, and
- Alternative Transportation

These are interdependent parts of a whole package, since it takes a critical mass of interventions to implement the ultimate goal of balancing supply and demand for transportation, while continuing Baltimore's revitalization.

The details listed for each category include information on:

- The *findings* which explain the need for action,
- An explanation of the *recommended actions*, and
- How to *implement the actions*.

Successful implementation of the recommendations is not only conditional on the availability of resources, but also on the quality of interagency cooperation and involvement of stakeholders. This document is a key reference in conversations about what it takes to put these conditions in place, and make tangible improvements in southeast Baltimore's transportation system.

## **Overview**

### **A. Intent**

The Director of the Baltimore City Department of Transportation (BCDOT) asked the USDOT's Volpe Center (Volpe) to study transportation issues in southeast Baltimore systematically and to make recommendations that are comprehensive in nature while also addressing specific local conditions. This report outlines those recommendations, based on Volpe's observations, research, analyses and discussions with internal City representatives and external stakeholders from neighborhoods, businesses and developers in the southeast. The intent of this study is not only to address transportation issues in the southeast comprehensively, but also to create a model for carrying out similar studies in all parts of the City.

### **B. Analyses Behind the Recommendations**

After a series of meetings with representatives of neighborhood associations, businesses and developers in the southeast, the Volpe team documented transportation-related issues in southeast Baltimore, both neighborhood-based and area-wide. In subsequent meetings, Volpe validated these issues with a similar cross-section of participants. An important product of these meetings was an extensive list of potential solutions to the issues already identified by the participants. In parallel, the team also conducted research on best practices in other comparable cities with respect to a range of policy tools available to help manage transportation-related impacts. This effort included documenting current practices in Baltimore with respect to these tools, and identifying gaps, which these tools could fill.

After completing the analysis of issues and policy tools, the team then outlined local and outside ideas for solutions that seem consistent with the primary eight goals of Baltimore DOT's 2003 Strategic Plan (listed at the end of this report). These potential solutions then formed the basis for an outline for where and how to apply these solutions in Baltimore. In an effort to organize and strategically group the list of over fifty opportunities for action, the Volpe team consolidated ideas into five groups of recommendations for the City's consideration, which is the content of this document.

### **C. Context**

There is a compelling reason for beginning systematic area transportation studies in Baltimore's southeast. The City has clearly sought revitalization - particularly through renovation and new construction - and nowhere are the trade-offs between rapid development and quality of transportation more evident than in the southeast. Everyone agrees that new land development puts pressure on the transportation system, and until recently that pressure has seemed acceptable in the southeast. With mounting evidence that future conditions in the southeast may become less acceptable, questions grow on just how to balance development pressures and the quality of the transportation network (cars, buses, trucks, bicycles, pedestrians and the transportation infrastructure they require) that serves the businesses and residents of the southeast.

## **SE Baltimore Transportation Systems Study: Recommendations**

The recommendations of this report are based on Volpe's understanding of the trade-offs involved in balancing these pressures, specifically how to address current congestion and that expected from development coming online in the next five to ten years, including both projects already in the permitting/construction pipeline and projects that can be reasonably predicted at this time. Whichever key impact indicators (e.g., accessibility, level of service, speed, safety and environmental quality) or strategic goals we might use, a change in a range of current practices is critical to achieve a successful balance into the future. In addition to a number of essential institutional or process changes, Volpe's recommendations are consistent with widespread industry approaches to mitigating congestion and increasing mobility. That is, there are basically three paths to balancing the supply and demand for transportation, each having short-term and longer-term actions that the City needs to take:

1. Increase real capacity (i.e., build new facilities);
2. Increase effective capacity (i.e., make more efficient use of existing facilities); and
3. Decrease demand for low occupancy vehicles (i.e., have more people using modes that demand less roadway space).

The Volpe team also recommends adding a fourth path to address mobility concerns that are not necessarily congestion-related:

4. Increase availability of non-car modes to non-drivers.

In crafting each of the five sets of recommendations, the Volpe team referred to these different paths in addressing high priority issues such as congestion, mobility, and safety as well as considering the eight goals laid out in the BCDOT's Strategic Plan.

Taken as a whole package, the recommendations amount to a comprehensive program for a well-balanced transportation system in southeast Baltimore, where land uses support automobile, public transit, and non-motorized modes, and users have viable travel choices. Recommendations range from short-term actions that provide immediate relief (for example, using countdown signals at wide intersections) to mid-term actions that put the City in a stronger position for the future (for example, identifying parking hot spots) to long-term actions whose implementation will need to occur over a number of years (for example, construction of a bridge for Boston Street over the railroad tracks).

## ***Recommendations (by category)***

### **A. Roads**

#### ***Findings***

Stakeholders are concerned about the ability of the road system to safely and effectively serve all types of users: motorists, transit riders, pedestrians and cyclists. A variety of issues affect these users in the southeast including increased traffic congestion on some roads, speeding, and pedestrian safety.

The current functional classification system (arterial, collector, local) does not specifically consider mobility for transit and non-motorized modes. Furthermore, the classifications of individual streets have not been updated in many years.

Although residents complained that particular locations were unsafe, the city does not systematically track crashes. Similarly, although both the city and developers do collect traffic count data, it is not assembled into one place where it may be easily accessed.

#### ***Recommended Actions***

In this section we recommend actions to move towards a safer and more efficient road network that serves users of all modes of transportation. These were created from stakeholder suggestions, information gained from discussions with BCDOT and other City staff, and analytic results from Volpe's customization of the regional transportation planning demand model for use in southeast Baltimore.

The actions to reduce traffic congestion and create a more pedestrian friendly environment will enhance both mobility and economic development in the southeast. Systematic tracking of crashes will enhance both safety and interagency communication (between BCDOT and the Police Department). The recommendations here meet the overall objective of selectively increasing road capacity where congestion is a concern, while at the same time recognizing the negative impacts on safety of high-speed traffic flow. These actions aim to balance the needs of all system users, addressing equity between drivers and non-drivers. They further the BCDOT strategic goals of mobility (# 3), safety (# 4), economic development (# 5), and interagency communication (# 7).

See also the *Short-Term Actions Document*, which details specific locations for short-term actions regarding signal timing, pedestrian signals, and other items. These actions have been committed to by the BCDOT Director and are either currently being addressed or will be addressed in the near future.

#### **a. RELIEVE BOTTLENECKS IN THE STREET SYSTEM**

There are a number of specific bottlenecks in the southeast including (a) the left turn lane from President to Eastern and (b) the section of Boston Street

## SE Baltimore Transportation Systems Study: Recommendations

near Ponca. Other examples may include Fayette and Fleet near President. Furthermore, with ongoing development in Fells Point and Canton, there is concern that congestion will increase on Eastern, Fleet and Aliceanna. Actions to address these current and future hot-spots include:

- **Improve signage on alternative, less congested routes.** For example, motorists traveling from Fells Point to I-83 could be encouraged to use Central Avenue and Fayette Street, rather than President Street, to reach the freeway.
- **Make effective use of the new signal control system network-wide** to enhance mobility and safety, particularly on major corridors that have a substantial numbers of signals. Examples of corridors in the southeast include President, Washington, Wolfe, Orleans, Fayette Streets, Eastern Avenue, Fleet and Boston Streets. Ways to use the system, in order of complexity, include: (a) Develop time-of-day-specific and day-of-week-specific signal timing plans, combined with signal coordination; (b) Manage traffic peaks due to special events; and (c) Dynamically manage the impacts of unplanned events (e.g. crashes), through gating<sup>1</sup> strategies and real-time traveler information. Baltimore City is already doing (a) and (b), although there may be some benefit from a review of the existing timing plans.
- **Create selective left-turn and parking restrictions.** On streets with wide parking lanes, the use of parking restrictions can effectively add a lane. Limited parking restrictions near an intersection can effectively add a pocket for either left or right turns. Similarly, left-turn restrictions can reduce the delay due to through-motorists being trapped behind left-turning motorists.
- **Convert two-way streets to one-way street pairs within specific corridors.** Two-way to one-way conversions can increase effective road capacity and thus improve level-of-service<sup>2</sup>. Converting streets to one-way reduces left-turn conflicts, which improves both vehicle and pedestrian safety. In situations where a substantial number of left turns occur, or there is a substantial number of left or right turns with conflicting pedestrian movements, the addition of turn pockets and the conversion to one-way streets can significantly increase street capacity.<sup>3</sup> Candidates for

---

<sup>1</sup> A gating strategy delays traffic entering an area where an incident has occurred, so as to prevent gridlock in the area of the incident.

<sup>2</sup> Level-of-service is a concept used by traffic engineers to measure delay at an intersection or on an approach to an intersection. Level-of-service “grades” are given, from A to F. Level-of-service A means light traffic, while E and F indicate unacceptable levels of congestion

<sup>3</sup> To test the impacts of one-way to two-way conversions and turn pockets, signalized intersections were modeled under various configurations. Total entering volumes (sum of all approaches) ranged from 2,400 to 3,000 vehicles per hour, divided as 2/3 on the major approach(es) and 1/3 on the minor approach(es). Ten percent left turns were assumed, as well as 60 pedestrians per hour on each leg.

## SE Baltimore Transportation Systems Study: Recommendations

such a two-way to one-way conversion include Fleet and Aliceanna streets, between Central Street and Boston Street.

- **Apply careful analysis to determine proper solutions to corridors.** In removing bottlenecks, there is always the concern that that action may attract more traffic to a corridor, and may simply displace the problem. Therefore, we strongly recommend careful analysis of each corridor prior to implementing any physical changes.
- **Consider construction options to improve the network.** Candidates for construction, as determined by field investigations and discussions with stakeholders and City staff, include:
  - Extension of the southbound left-turn lane from President to Eastern;
  - Widening of Boston Street from two to four lanes near Ponca; and
  - Construction of a bridge for Boston Street over the railroad tracks.

As mentioned earlier, any significant change in corridor capacity should be carefully analyzed to ensure that it does not create unexpected traffic displacements. As an example, Figure 1 shows the estimated impact of widening Boston Street in the area near Ponca Street from two lanes to four lanes. The numbers are changes in daily volumes in hundreds of vehicles per day. Red lines and positive numbers indicate an increase in traffic of at least 500 vehicles / day, while green lines and negative numbers indicate a decrease in traffic. Note that in the Canton area, there is a shift in traffic from O'Donnell Street to Boston Street, but the increase in Boston Street traffic is greater. This propagates to the upper Fells Point area, appearing as an increase of several hundred vehicles per day on Pratt and Lombard.

---

With two-way streets (one lane in each direction) and no turning pockets, level-of-service ranged from D to F. With the addition of 50-foot left turn pockets, performance improved to a level-of-service between B and D.

Similarly, the conversion to a one-way street (with two lanes in the one direction), also improved the intersection performance, even when total entering volumes were kept the same. With one-way streets, level-of-service ranged from B to E. The combination of one-way streets and turning pockets (for both left and right turns) produced the best performance, yielding level-of-service B.



## SE Baltimore Transportation Systems Study: Recommendations

- ✓ It becomes easier to set the expectations of residents, and to create a transportation system that balances the needs of local and through users.
- ✓ Clear street classification enables higher-density, transit supportive development to be focused near those streets that are designed for transit service.
- ✓ Road maintenance costs are reduced, as heavy vehicles can be rerouted to those streets that are designed to withstand them (for a truck or bus, the pavement damage cost per vehicle-mile is far higher on a light duty street than a heavy duty street).

### c. **TRACK CRASHES AND ROAD USAGE SYSTEMATICALLY**

The Volpe team recommends building and using a database of both crashes and road usage, so that truly dangerous locations and situations may be identified and mitigations undertaken quickly. Specific recommendations include the following:

- **Track crashes involving motor vehicles** (motor vehicle only and motor vehicles with pedestrians or bicycles) over a number of years in order to identify trends and exceptionally dangerous situations. Safety of all transportation system users (both motorized and non-motorized) is an ongoing concern. A number of locations in the southeast are perceived to be dangerous by citizens, and specific areas often encounter frequent problems of a similar nature. By tracking crashes, specific problems can be identified and remedied. Sources of motor vehicle crash data include the Baltimore Police Department and/or the State of Maryland. (It should be noted that the Baltimore Police Department has recently discontinued their entry of crash data into a database.) Information for each crash should include at least the following:
  - Location (intersection, or distance/direction from intersection)
  - Date/time
  - Weather conditions
  - Type (single vehicle, multi-vehicle, pedestrian, bicycle, etc)
  - Severity (injuries, fatalities)
  - Direction of travel of the vehicle(s) involved

Certain information fields, if collected by the City's Police Department and/or the State of Maryland, will allow BCDOT to construct accident diagrams using available software. Constructing these diagrams by hand, as is currently required, is prohibitively time-consuming. BCDOT and the Police Department can determine what additional fields are required and whether it is practical to collect them.

- **Determine traffic volume and road usage** so that the impacts of development can be accurately assessed. This is especially important in a rapidly growing area such as the southeast, where roads are nearing or at

## **SE Baltimore Transportation Systems Study: Recommendations**

capacity. Tasks include collection of data and entry of data into a retrieval system such as geographic information system (GIS). Both City- and developer-gathered data should be systematically entered into the retrieval system. This database will be useful to both the City and to developers as they design mitigation measures.

By combining crash and traffic volume data into a single GIS, it is possible to understand crash rates. Benefits will include:

- ✓ Improved safety, as it becomes possible to identify and correct truly dangerous situations
- ✓ Improved ability to manage the roadway network for mobility, by reviewing the systematically gathered traffic count data.
- ✓ A regional planning model that is better calibrated for city streets. By sharing the count data with the Baltimore Metropolitan Council, it will be possible for that organization to improve the calibration of the regional planning model.
- ✓ A model of inter-agency communication between the City's Police Department or State (crash data) and BCDOT (traffic volume data).

### ***Implementation***

The lead agency for all of these efforts will be BCDOT; however, both the City Planning and Police Departments need to play major roles. There should be coordination with Planning, because the spatial distribution of new development may influence the appropriate road classifications and the actions that need to be taken to relieve congestion. The Police Department is involved because it has the crash records, and has a shared interest with BCDOT in improving safety. In addition, planning of transit corridors will need to be coordinated with the MTA.

Given that most of the efforts along these lines could affect potential rights-of-way for the Red Line, any significant initiatives should be coordinated with Red Line planning. If the Red Line operates on surface streets, high priority should be given to either an exclusive transit right-of-way (at a minimum, queue jumps at problematic intersections, which allow buses to avoid a long queue at a signal) or to protecting those streets that transit uses from excessive congestion.

More specific details on steps to implement the actions outlined above include:

#### **a. RELIEVE BOTTLENECKS IN THE STREET SYSTEM**

Tasks and the associated level of effort are highly variable, depending on what is actually done. Simpler actions could be selected for the short term, while planning and budgeting are in process for bigger-ticket long-term capital investments. Changes such as peak hour parking and left turn restrictions are inexpensive to implement, but require consistent enforcement. They may also reduce the supply of parking, and turn restrictions may force some motorists onto more circuitous routes.

## **SE Baltimore Transportation Systems Study: Recommendations**

### **b. CREATE AND USE A STREET SYSTEM MANAGEMENT PLAN**

The technical effort to apply this requires some additional staff time within BCDOT. The higher cost is in political capital, as there may be sharp disagreements among stakeholders as to the proper classification of a street. Steps include:

1. Inventory the current classification in electronic form
2. Identify obvious disconnects (e.g., a local street with 10,000 cars / day)
3. Identify candidates for reclassification

### **c. TRACK CRASHES AND ROAD USAGE SYSTEMATICALLY**

For crash tracking, BCDOT tasks include:

- Setting up a GIS-linked database to track crashes. Ensure that the database contains sufficient information to enable the automatic construction of crash diagrams.
- Establishing a consistent procedure for obtaining updated data from the Police Department
- Regularly entering updates into the database

The effort depends on the technology available. A rough estimate of staffing would be one person-month to set up, then much lower for on-going maintenance. For road usage tracking, the effort includes:

- Assembly of existing count data into a GIS
- An on-going program to gather additional counts where needed
- On-going efforts to enter new count data (either from the City count program or from developer's counts) into the GIS.

Again, set-up of the database would require about one person-month, and then much less effort for on-going maintenance. The effort or cost required to gather additional counts depends on how many and what types of counts are made.

## **B. Planning and Land Use**

### ***Findings***

Transportation impacts in Baltimore – particularly from changes in land use – have historically not been systematically considered during either city-wide strategic policy-making or during neighborhood planning initiatives.

Transportation analyses, including traffic impact studies, have been coordinated with site plan review for specific development projects, but in the current process, opportunities to affect the transportation network are limited to infrastructure mitigations directly adjacent to the development. Although southeast Baltimore has developed according to plans for that area, including the urban renewal plans for Inner Harbor East, not all transportation impacts have been accounted for during planning and policy making for the area. These transportation impacts are often inadequately taken into account because the necessary analytical tools are not in place or because the needed interagency coordination only occurs occasionally, limiting its effectiveness.

One prime lesson learned can be taken from the development of the Inner Harbor's Urban Renewal Plan. In this case, neither the City nor residents had a full understanding of the transportation impacts (e.g., congestion and parking) caused by its development. Having a thorough understanding of the impacts of the plan would have allowed the City to identify the future transportation needs and develop transportation programs to best meet those needs. This may have included placing more responsibility for mitigating the transportation impacts on the development community, or at least allowing the necessary lead-time for the City to implement mitigations. Currently, the City manages traffic issues as they arise, on a case-by-case basis.

At present, Baltimore does not have the analytical tools that are needed to understand the transportation impacts of policy decisions fully. To address this need, the Volpe Center has adapted a regional transportation demand model to southeast Baltimore as an analytical tool for understanding the future impacts of planned development within the southeast. In the future, this model and others can help decision-makers determine appropriate levels of development based on managing expected impacts, and determine what strategies should be used to manage the increased travel demand. A model that encompasses data for all of Baltimore City would also be able to provide insight into how major land use decisions would affect the entire transportation network.

### ***Recommended Actions***

Strategic and effective planning is critical to developing a balanced transportation system. At the same time, planning policies and land use regulations should be designed to support the mission and strategic goals of the BCDOT. To maximize the value of planning and land use regulations in southeast Baltimore to achieve a balanced system while supporting economic development, Volpe recommends combining a number of planning tools into a sequential, but iterative process.

## SE Baltimore Transportation Systems Study: Recommendations

While consideration of the transportation-land use connections and broader policy implications within any one of these tools will benefit southeast Baltimore and the entire city, a coordinated effort ensures that various tools do not conflict in the larger framework of managing transportation supply and demand. Figure 2 shows the complete “package” of planning tools designed to prepare and manage the transportation network to support a vibrant city.

Tools fall into two categories: “planning” and “implementation.” The objective of the planning activities is to identify and shape development and transportation policy to produce the best, most efficient outcomes for the city. Implementation tools are programs used to help the City reach its strategic goals. Many of these components are being discussed in the southeast after substantial development is already in place or authorized. The earlier in the development cycle that the tools are actively used, the greater the benefits of managing impacts.

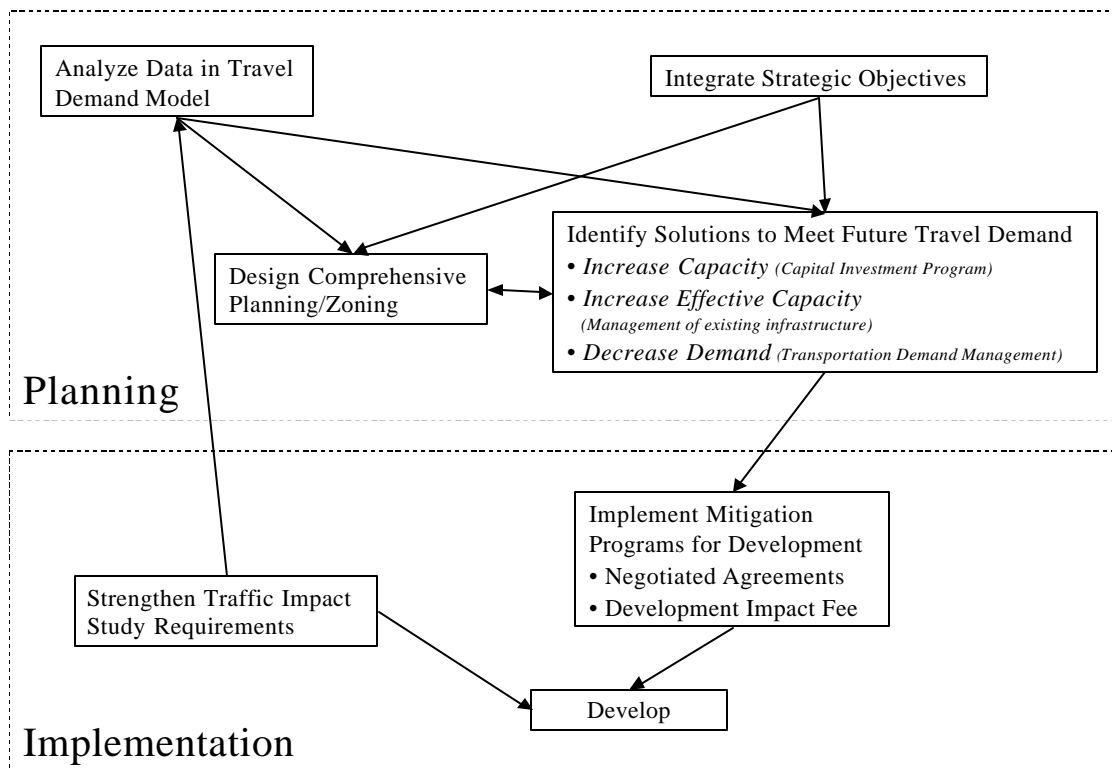


Figure 2 Recommended Planning Tools

### a. EXPAND AND ELEVATE PLANNING TOOLS FOR EFFECTIVE DECISION-MAKING

We recommend the following actions to influence planning and land use-related decision-making, leading to more effective policies in managing transportation impacts.

## SE Baltimore Transportation Systems Study: Recommendations

- **Integrate strategic objectives among agencies**, making use of executive-level interagency discussions to ensure that agency programs are supportive of each other and work towards common goals. It is important to recognize overlap and minimize contradictions among the policies of various agencies and to make sure that one group's activities do not negatively impact those of another. By working together, the various city agencies can use their combined policy tools to direct development to underdeveloped areas of the city and ensure that growth in rapidly developing areas is manageable. These objectives should be revisited as development continues in the southeast.
- **Analyze data in a travel demand model** to understand the impacts of zoning and development policies at a systems level. Volpe recommends that the City use a customized version of the regional transportation demand planning model to support major land use policy decisions, in conjunction with City-wide policies to identify and prioritize future transportation projects. Figure 3, from Volpe's modeling work done during the Southeast Study, portrays expected peak morning traffic conditions in southeast Baltimore in 2030, assuming that existing growth patterns continue and no major transit projects, such as the Red Line, are built. Colors of major roads show expected volume-capacity (V/C) ratios, with green indicating 0.85 or less, orange from 0.85 to 1, and red greater than 1. The thickness of each line is proportional to projected traffic volume.

Models such as this illustrate where traffic bottlenecks are likely to occur and where development and transportation planning efforts should be focused. The regional transportation planning model Volpe customized for the southeast should continue to be updated with new data when development decisions are made and when specific transportation changes are implemented. This will help to maintain an accurate model of current conditions in the area and provide a basis for the City to test the impacts of new land-use policies or major transportation infrastructure projects.

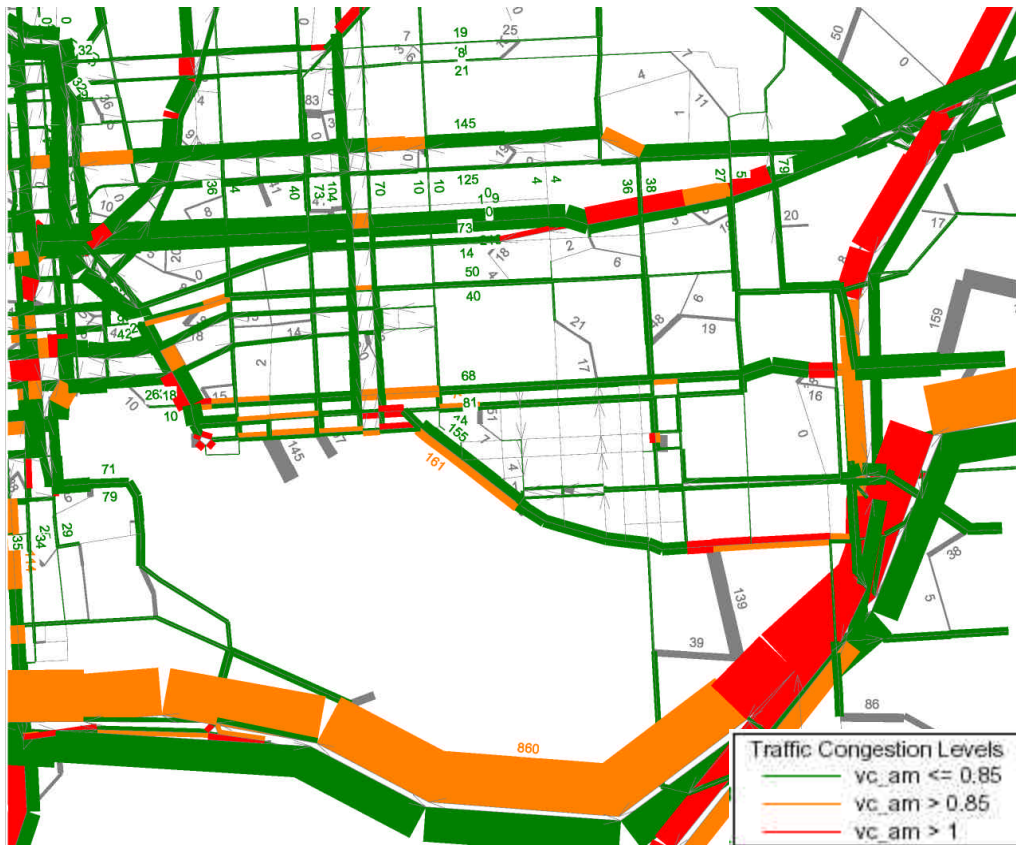


Figure 3 Expected Traffic Conditions in Southeast Baltimore in 2030 (without Red Line)

- **Design comprehensive planning/zoning** to shape the development of southeast Baltimore to support city-wide strategic objectives. Comprehensive planning leads to a vision of future land use, and uses zoning regulations to determine where specific activities occur (e.g., high-density mixed-use, single-family residential, neighborhood commercial, open space) and how they are developed, including what is required to proceed and how it should be designed. The comprehensive planning process is designed to support strategic decision-making, such as zoning for higher density (and requiring less parking) along existing or planned transit corridors, where the transit route can absorb the additional travel demand. This type of decision-making is difficult without an understanding of the transportation impacts of policy decisions. By modeling the transportation impacts of zoning changes, decisions are made with a fuller understanding of their consequences.
- **Identify potential solutions for managing expected levels of travel demand in the future.** There are a wide range of specific actions that can help manage expected future traffic volumes and include capital investments, better network management, and transportation demand management strategies. (More information on these tools can be found in the “Roads” and “Government Relations” sections of this report.)

## SE Baltimore Transportation Systems Study: Recommendations

Albuquerque, New Mexico is using a development impact fee to pay for infrastructure improvements related to development, while Boston, Massachusetts is focusing on enhancing transit and making more efficient use of existing roadway space. If it is not feasible to change the supply or demand for roads and parking to handle the anticipated travel demand, comprehensive plans should be redone. When considering solutions to future transportation needs, it is important to consider non-transportation strategic objectives in addition to those identified by the BCDOT including economic development, public safety, and equity.

### b. IMPLEMENT TOOLS FULLY FOR EFFECTIVE PLANNING

We recommend designing programs to manage transportation impacts within the context of broader city-wide objectives. In some parts of the city, existing infrastructure capacity is underutilized, such as in Park Heights and the West Side. These areas are able to absorb additional development with little stress to the city infrastructure. There may be existing deficiencies, such as environmental contamination or sub-standard roadway designs that have prevented development, in which case Baltimore may decide that it is appropriate to mitigate these deficiencies to attract development, potentially using tax increment financing (TIF). In other areas, development will create more travel demand than existing infrastructure can handle, as seen in the southeast and Locust Point in south Baltimore. Since new development increases travel, developers and the City need to determine a fair way to share responsibility for mitigating a development's impacts.

- **Implement development mitigation programs** that place responsibility for mitigating new travel demand on those who create it. Two techniques for this include negotiated agreements and development impact fees. Additional analysis is required to determine which strategy is a better fit to the needs of Baltimore. "Better fit" will depend on the volume of development, the types of mitigation strategies the City decides to pursue, and opportunities for building infrastructure. To the extent feasible, these techniques should be applied in the southeast, although the application may be limited given that much of the development has already been approved. Actions would be as follows:
  - ❖ **Negotiated Agreement Ordinance**: By incorporating requirements for negotiated mitigation within the zoning ordinance, developers are required to meet with BCDOT staff during the development approval process to determine how the developer will compensate the city for the additional travel demand it will create. Negotiated agreements allow for flexibility in identifying mitigation actions. Mitigations may focus on issues directly related to the development or they may support city-wide efforts to address congestion. For example, agreements could be used to install traffic signals adjacent to the development, to support development of a city-wide traffic

## SE Baltimore Transportation Systems Study: Recommendations

management center or efforts to reduce travel demand such as parking maximums or subsidized transit for employees/residents. Once policy is set forth, the City and developers work together to determine the appropriate solutions based on the development impacts determined through modeling and analysis. Minneapolis, Minn. is an example of a city with a strong negotiated agreement program. (See *Policy Tools* for more information.)

- ❖ **Development Impact Fees:** Impact fees calculate the cumulative transportation impacts of development and distribute the cost of infrastructure needed to support the increased travel demand between the developments. A development impact fee zone encompassing southeast Baltimore could be used to support the Boston Street Viaduct project and other capacity improvements along with potential projects to better connect the southeast to the interstate. Baltimore will need to calculate the cost of infrastructure improvements and determine how to distribute these costs fairly amongst future developments. Impact fees are used in many fast growing southern and western cities as well as suburbs throughout the country, but are less used in existing metropolitan areas in the east.
- **Strengthen Traffic Impact Study requirements.** Baltimore currently has traffic impact study (TIS) guidelines which developers have been willing to follow in order to expedite the approval process. The non-regulatory nature of the current TIS guidelines means that they could be ignored if desired, which makes it difficult to attach mitigation requirements to the outcome of the studies. Codifying TIS within zoning ordinances would ensure that the impacts of developments are identified, and would provide a basis for which mitigations would be assessed. Current TIS guidance provides a few examples of developments for which TIS should be conducted, but leaves most developments to be analyzed by their traffic output (100 peak hour trips). TIS regulations should identify additional specific development types (size and use) for which TIS are done to ensure that developments with significant traffic generation undergo a TIS. TIS are also an important means for keeping the travel demand model up to date.

Benefits of expanding and elevating planning tools include:

- ✓ Outlines future needs
- ✓ Allows for informed policy-making to guide and manage development.
- ✓ Prevents overdevelopment that is unsustainable.
- ✓ Helps City government prioritize funding. Programs can be designed to spend money where needed, while not subsidizing projects that can be funded independently.

## SE Baltimore Transportation Systems Study: Recommendations

- ✓ Supports policies that prevent contradictions or unintended secondary problems.

### ***Implementation***

Coordinating transportation planning and land use requires a broad network of support to be successful. The Mayor and his staff should lead the effort in supporting a unified strategic approach that includes aligning departmental activities with City-wide objectives. The BCDOT and City Planning Department need to work closely together to develop the tools needed to implement these objectives. Since many transportation positions are housed within the Planning Department, the two departments must assess their combined staff's skills to determine which recommended actions will be led in each department. Table 1 shows the level of involvement required from various agencies for each of the tools described above. In addition to the lead agency, the other contributing agencies (indicated by "x") are active in varying degrees.

**Table 1 Agency Involvement Needed to Implement Planning Tools**

	<b>Mayor/City Council</b>	<b>BCDOT</b>	<b>Planning</b>	<b>BDC</b>	<b>Other</b>
Integrate Strategic Objectives	Lead	x	x	x	x
Analyze Data in Travel Demand Model		Lead	x	x	BMC
Design Comprehensive Planning/Zoning	x	x	Lead	x	x
Identify Solutions to Meet Future Travel Demand	x	Lead	x		
<i>Increase Capacity (Capital Investment Program)</i>	x	Lead	x	x	x
<i>Increase Effective Capacity (Management of existing infrastructure)</i>		Lead			Office of Neighborhoods, Police, Parking, MTA
<i>Decrease Demand (Transportation Demand Management)</i>	x	Lead	Lead	x	MTA
Implement Mitigation Programs for Development	x	Lead	Lead	x	
Strengthen Traffic Impact Study Requirements		Lead	x		

In addition to the agency and policy coordination, additional analysis of particular tools will need to be completed to determine their specific benefits, particularly shifts in focus of the transportation programs (i.e., from the Capital Investment Program to TDM), Negotiated Agreements, and Development Impact Fees. The

## SE Baltimore Transportation Systems Study: Recommendations

following provides a guide of the level of effort and specific steps required to implement the tools:

### a. **EXPAND AND ELEVATE PLANNING TOOLS FOR EFFECTIVE DECISION-MAKING**

- **Integrate strategic objectives among agencies:** See “Government Relations” section of this report for more information.
- **Analyze data in travel demand model:** Baltimore’s City Planning Department currently has a copy of the regional planning model software and data. Tasks include:
  1. Collecting traffic counts, transit data and confirming roadway configurations,
  2. Developing and maintaining model with new data, and
  3. Running scenarios as needed.

These tasks require significant effort to initiate and a moderate effort to maintain the model. Funds will be needed to develop and maintain the model, which can be done by BCDOT or City Planning Department staff or through contractors. If maintained in-house, staff will need additional training, as current use of the model is limited. The Baltimore Metropolitan Council, developer of the regional model used by the City, may be a potential resource for assistance with the model. Existing staff can be used to input collected data into the model

- **Design comprehensive planning/zoning:** Requires limited additional effort as both local and city-wide planning activities already occur. City-wide comprehensive planning is currently underway. It is imperative that this process incorporates strong interagency coordination and analysis of transportation impacts. If ready before the planning process concludes, the transportation demand model should be used to understand expected future travel demand. Otherwise, transportation impacts should be qualitatively analyzed to determine if there are any major disjoints between the comprehensive plan and transportation network. Future localized planning efforts should be matched to areas where major changes are expected or desired and must include travel demand analysis and consideration of strategic objectives. Both local and city-wide planning should consider the type and affordability of housing and accessibility of jobs and commerce in the context of availability of transportation infrastructure and capacity. Interagency cooperation is key to ensuring the planning process is strategic and comprehensive.
- **Identify potential solutions for managing expected levels of travel demand in the future:** Requires limited additional effort but requires more strategic consideration of long-term and policy implications of

## SE Baltimore Transportation Systems Study: Recommendations

strategies. The travel demand model should be used to identify the long-term transportation needs of future development. BCDOT's Engineering and Construction and Traffic Divisions should identify potential solutions for increasing supply (see the "Roads" section of this report) and an analysis should be done to identify ways to reduce demand (see the "Government Relations" section). Various potential supply-increasing and demand-reducing solutions should be compared based on effectiveness, cost and adherence to strategic objectives before a final set of solutions is developed into transportation programs. Staffing and funding needed to implement the most desirable set of solutions may differ from existing BCDOT programs and staffing and should be continuously evaluated.

### b. IMPLEMENT TOOLS FULLY FOR EFFECTIVE PLANNING

The recommendations described in this category require new regulations to be passed. Consequently, Baltimore's Solicitor's Office should be involved in the development of the programs and any needed legislation.

- **Implement development mitigation programs:**

- ❖ **Negotiated Agreements Ordinance:** In order to implement effective mitigations via negotiated agreements, Baltimore must:

1. Develop negotiated agreement policy standards that address:
  - a) Threshold of impact for which mitigation is necessary
  - b) Strategies and programs that will be used to mitigate impacts of development
2. Institute a regulatory framework for requiring negotiated mitigations
3. Negotiate agreements on a project-by-project basis  
Once established, a negotiated agreements program should require minor additional effort to review TIS and negotiate during development approval. Higher levels of effort may be required if there is opposition from the development community.

- ❖ **Development Impact Fees:** Significant planning must be done before implementing an impact fee. The following steps are typical of what is required to develop a legally sound impact fee:

1. Define minimum level of service (LOS) for roadway facilities
2. Determine transportation impacts of development
3. Prepare a list of improvement projects and their costs
4. Establish a Capital Improvements Program
5. Calculate the fee (per unit of development based on the cost of the mitigation)
6. Describe the nexus between development, the fee, and the projects
7. Set administration and review procedures

## **SE Baltimore Transportation Systems Study: Recommendations**

8. Have impact fee procedures approved by City to begin implementation

Once the program framework is set, minimal effort is needed to run the fee program. The impact fee program requires occasional updates as the planning horizon changes and infrastructure is built.

- **Strengthen Traffic Impact Study (TIS) Requirements:** Requires limited additional effort as TIS's are already done. Tasks include:
  1. Rewrite TIS guidelines;
  2. Incorporate requirements into zoning code;
  3. Determine how TIS's can be used to complement other tools such as development mitigation or demand modeling; and
  4. Evaluate extent of compliance with TIS as developments are completed.

## C. Government Relations

### *Findings*

Strong government relations between the Baltimore City DOT and other city agencies and organizations and the public are essential to keep all stakeholders informed about actions affecting the transportation system in southeast Baltimore, and to collect feedback during the decision-making process. Interagency coordination is especially important because BCDOT, the City's Planning Office, Parking, the Police Department, and the MTA all share responsibility for the transportation network in Baltimore. These agencies currently have some coordination in place at a city-wide level, but would also benefit from discussions focusing on specific areas such as the southeast. At the same time, outreach to citizens is important to help them understand which department/division of city government is most appropriate for responding to their transportation-related concerns. This helps to manage the public's expectations and keep citizens better informed about transportation activities.

Volpe collected feedback from the business and residential community in the course of its stakeholder participation work for the Southeast Study. This information has been essential for analyzing this area's transportation issues and identifying possible solutions. In addition, the feedback collected during the Southeast Study was closely monitored to ensure that it was adequately addressed and representatives from other City agencies and organizations were active in helping Volpe to accurately interpret the feedback collected.

### *Recommended Actions*

Focus on strong government relations (inter-agency and City to its external stakeholders) improves the management of the whole transportation system. Strong interagency coordination and public outreach lead to more effective decisions, an improved transportation planning process, and support all of the eight strategic goals set forth by the BCDOT, especially #7: "Improve the quality and quantity of information communicated among all regional transportation stakeholders."

Volpe recommends a three-pronged approach to strengthening government relations to benefit not only the southeast, but also other geographic areas of the City. These will help ensure that all participating agencies and external stakeholders are kept well informed and can influence decisions that affect their interests.

#### **a. STRENGTHEN INTERAGENCY COORDINATION AND DECISION-MAKING**

Interagency coordination among all government agencies that influence the quality of Baltimore's transportation system will help design and implement consistent transportation policies, identify opportunities for improvement, and

## SE Baltimore Transportation Systems Study: Recommendations

allow constant communication among agencies to better coordinate how they address specific issues. To achieve this, Volpe recommends that the City:

- **Re-establish working groups with other City/State departments** to tackle common issues and keep all parties informed about agency activities related to transportation. The BCDOT has formed working groups with the Police Department and the Parking Authority, and has had an initial meeting with each agency. A working group with the MTA also needs to be established to address many items (see the “Alternative Transportation” section of this report). (Three documents developed during this project contain distillations of stakeholder comments gathered during the Southeast Study that are appropriate to convey to the Parking Authority, the Police Department, and the MTA. See *Parking Authority Working Group Actions*, *Police Working Group Actions*, and *MTA Working Group Actions*.)
- **Increase use of the current Economic Development Group as a forum to introduce and solicit executive support for transportation projects or strategies.** These bi-weekly meetings of leadership from different City departments provide excellent opportunities to ensure that all Baltimore City actions that affect transportation policy are well coordinated and support the City’s Transportation Strategic Plan. Specific projects, studies, and strategic planning efforts should be outlined at these meetings. The meetings will also provide an opportunity to address questions or concerns from partners.
- **Integrate strategic objectives and investment plans related to transportation**, which will directly support the Economic Development Group’s deliberations by explicitly identifying common interests over future budget cycles and recognizing areas needing additional support or analysis.

Increased and stronger interagency coordination will result in:

- ✓ Joint strategic decision-making that accounts for city-wide impacts,
- ✓ Improved investment planning that may benefit the CIP process, and
- ✓ Increased understanding and support for transportation improvements that strengthen the city’s economy.

### b. IMPLEMENT GOVERNMENT-ENDORSED PROGRAMS

Several programs can be implemented at the city or neighborhood level that can positively influence travel behavior in the southeast and elsewhere. These programs focus on decreasing single-occupancy vehicles and encourage proactive approaches to improving the transportation system. Ultimate success of these programs is a function of effective outreach to the public and business community, showing the benefits (e.g., improved traffic flow, less stress in

## SE Baltimore Transportation Systems Study: Recommendations

commuting) of these strategies to the southeast and its residential and business needs. The recommended programs are:

- **Enhance the Transportation Demand Management (TDM) program** to further promote alternative transportation/travel reduction programs to residents and employers/employees. Good advertising of the benefits of specific programs (e.g., ride-sharing, biking, public transportation) that are viable can encourage participation. Enhancements to the TDM program can help to encourage business participation and be used to further educate the public on the benefits resulting from TDM-related activities, such as less congestion or improved quality of life. For example, BCDOT's existing ride-sharing program can be further expanded to provide opportunities for people to experiment with commuting by transit without losing existing parking privileges, or to include incentives for walking or biking to work. Baltimore currently has a number of independent programs to support TDM, but because these programs run from various agencies, there is no unified and visible TDM program. This makes it difficult to develop new innovative programs without a single voice to represent this multi-faceted transportation demand management tool. Seattle's TDM program "Way to Go, Seattle!" is a good example of a successful TDM program (see *Policy Tools* paper, page 24).
- **Support the establishment of Transportation Management Associations (TMAs)** by groups of adjacent businesses to provide TDM opportunities to employees and customers. Areas such as Fells Point, Johns Hopkins, or Canton Crossing may have enough traffic and business to support a TMA, which can serve as a non-profit organization. This program allows for localized TDM programming that will take ownership of approaches to improve traffic flow, provide access to alternative transportation, and ease parking issues. A TMA may be a component of broader business associations that work on a broad range of issues within the business community. The Downtown Partnership of Baltimore's Downtown Shuttle (DASH) service is one example of a TMA program. The BDC and area businesses such as Streuver Brothers or Johns Hopkins can also work together to determine feasible options that can meet their needs while positively affecting the transportation system in and around the southeast. In Boston, TMAs have been able to form close working relationships with the local transit provider to help develop or adjust services to meet the needs of the local businesses.
- **Establish a traffic reduction ordinance (TRO)** requiring businesses to minimize single occupancy vehicles used by employees to commute. Many TROs allow businesses to use a variety of TDM measures, which are incorporated into a traffic reduction plan that is submitted and evaluated annually or biennially. Some TRO require specific "reductions" such as increasing average vehicle occupancy from 1.1 people per vehicle

## SE Baltimore Transportation Systems Study: Recommendations

to 1.8, or require specific programs, such as implementing an employer-subsidized transit pass if employee parking is subsidized, or educating employees about the alternative transportation options available to them. Although a TRO will require businesses to implement such measures, the outcome will reduce congestion, support alternative transportation, and have positive cumulative impacts. TROs are often used as a solution to serious air quality problems, but are also used to support higher-density development where increasing transportation infrastructure is undesirable or infeasible. One example of a TRO is in Montgomery County, MD, which in 2003 implemented a TRO that requires businesses with more than 25 employees to submit a traffic mitigation plan.

BCDOT's enhancements to the TDM program, and encouragement for creating TMAs or TROs can demonstrate their proactive approach to addressing current and future transportation demand. Should these programs be implemented, benefits will include:

- ✓ Better awareness of alternative forms of transportation,
- ✓ Allowing more development without increasing congestion,
- ✓ Better air quality and less congestion,
- ✓ Stronger support and accountability of transit, and
- ✓ Potential health benefits from increased levels of walking and biking.

### c. **DESIGN EDUCATION/OUTREACH TOOLS TO IMPROVE COMMUNICATIONS WITH CITIZENS**

Citizens and businesses in the southeast are very interested in shaping the future of their area, and having consistent communication with them allows the City to collect useful feedback as well as keep them informed about improvements to their area. Outreach and information dissemination can serve to educate the public about new practices or processes taking place and can also manage their expectations as new projects come online. Mechanisms to further improve outreach and education include:

- **Educate citizens on communication channels** to better inform them on what agency/division to contact for specific issues. This will limit their frustration that resolving concerns seems to take longer than residents want. An education campaign through fliers or brochures can show which concerns 311 can address and which require more extensive deliberation or planning. Internal staff should also be trained to be able to better communicate these criteria to the public. The 311 tracking system may also be enhanced to include other ways that capture feedback that may not necessarily come in through 311, or may not be related to the specific issues managed by the 311 system.
- **Create and use stakeholder management plans** to address stakeholder participation systematically. Stakeholder management has been an ad-hoc

## SE Baltimore Transportation Systems Study: Recommendations

technique in the past, but can become a more routine practice to be applied throughout the city. A management plan could be based on Volpe's approach to managing stakeholders in the Southeast Study. Although outreach is only implemented for specific studies or projects, having a system in place that outlines how to address stakeholder participation will minimize the work needed to create a new stakeholder plan for each instance.

- **Continue to publicize policies and standards.** The BCDOT website includes useful information on potholes, speed bumps, and the red light camera program. Policies and standards, as well as criteria for installation of new traffic calming or traffic control devices, should continue to be publicized both electronically and in hard copy. In addition, BCDOT should work with members of the City Council to encourage them to share transportation information with their constituents. This can serve as an effective and efficient way to share information with the public, and to engage the City Council in better understanding the reasoning behind specific transportation improvements being planned for representatives' respective districts.

Public outreach is an essential part of any transportation system as it helps to inform citizens and businesses of operational changes and investment decisions while providing a mechanism to share ownership by providing input and asking questions. Benefits of improving the communication tools in place include:

- ✓ Creating an efficient way to manage and organize feedback by enhancing the 311 system to serve as a master database of collected feedback, including non-311 calls,
- ✓ Promoting the purpose of 311 to manage the public's expectations,
- ✓ Encouraging open communication by shaping supplemental processes, and
- ✓ Increasing understanding of BCDOT activities through information dissemination on the website or via mailers.

### ***Implementation***

The BCDOT is the lead agency for the government relations-related activities. To implement these strategies effectively it is important to identify key representatives within the City agencies and MTA to include in all interagency communication. Department-heads and senior staff will be able to provide critical information and also participate in key decision-making. While all of the mechanisms described provide opportunities to improve government relations, they require varying approaches, which may need different levels of staff support, funding, and maintenance:

#### **a. STRENGTHEN INTERAGENCY COORDINATION AND DECISION-MAKING**

This requires limited additional effort or funding. Tasks include:

## **SE Baltimore Transportation Systems Study: Recommendations**

- Organizing regularly scheduled meetings with key agencies;
- Coordinating communication on transportation activities across agencies; and
- Determining which transportation issues and decisions to present at the Economic Development Committee meetings.

### **b. IMPLEMENT GOVERNMENT-ENDORSED PROGRAMS**

This requires a minimum of two staff people to develop, promote, and maintain the TDM program. Tasks include: Developing alternative strategies while engaging business communities and neighborhoods, communicating the benefits of program involvement, and valuating or monitoring activities. Additional funding is needed to staff the program and develop materials. Specific steps to further develop these programs are outlined below.

- **Enhance the TDM Program:** In order to most effectively encourage use of alternative transportation, TDM programs within Baltimore should be centralized and provided with additional staff in order to support existing programs and to develop additional ones. Some programs can be implemented quickly, while other TDM efforts, such as improving transit, may take much longer. Baltimore should look through the literature and analysis of existing TDM efforts to determine which are most appropriate for the City. “Way to Go, Seattle!” and “Go Boulder” are two programs that should be referenced to gain an understanding of these programs’ successes and challenges.
- **Support the establishment of TMAs:** Baltimore can work with business associations to identify needs, develop programs by providing technical assistance, and help identify funding sources. For larger employers or areas where business associations do not currently exist, the City may require that a TMA be organized before it approves new development. Baltimore should work with existing and new TMAs to ensure that they are aware of and have access to TDM programs that might be of interest, such as Guaranteed Ride Home programs or tax-incentive programs.
- **Establish a TRO:** City-wide support is needed to implement a TRO. Once support has been gathered and the law passed, City staff are needed to support, monitor and enforce the ordinance. This task requires additional staff to support and monitor compliance, and should be incorporated into a TDM program group in order to use resources most efficiently.

### **c. DESIGN EDUCATION/OUTREACH TOOLS TO IMPROVE COMMUNICATIONS WITH CITIZENS**

This requires additional support from staff, interns, or consultants. Tasks include:

## **SE Baltimore Transportation Systems Study: Recommendations**

- Developing an education campaign,
- Creating a stakeholder management plan,
- Creating outreach materials, and
- Disseminating materials.

Additional funding is needed for the design and dissemination of materials.

## SE Baltimore Transportation Systems Study: Recommendations

### D. Parking

#### *Findings*

Given rising auto ownership rates and increased car use by southeast residents and commuters, parking shortages are a reality in many locations throughout the area. Supply does not match demand, and without changes, the situation is likely to worsen.

Although a complete examination of parking was not in the scope of Volpe's work, it has been included as one of the key variables. At each of the southeast stakeholder meetings, participants repeatedly mentioned parking as a high priority concern; furthermore, parking is closely linked to other critical parts of any city's transportation system. Although many residents and business owners expressed opinions about parking in the southeast and had suggestions for what to do about it, this study is only able to provide general information about parking policy. A full-scale parking study would need to be done to analyze specific parking policies.

Demand for parking has been rising steadily across the southeast as car ownership and use increase, and capacity is becoming strained in many areas. For example, even if an RPP program were to be implemented everywhere, there may not be enough street spaces available to accommodate a large number of multi-car households. At the same time, more parking typically leads to more driving. Rising demand for parking at downtown businesses has resulted in increased supply of parking there, which in turn encourages more commuters to choose private vehicles for their trip across the southeast. Actions taken in other cities to reduce demand include the following:

#### **a. USING RESIDENTIAL PERMIT PRICING TO DISCOURAGE HIGH VEHICLE OWNERSHIP**

Several cities, such as Alexandria, Virginia, and Toronto, Ontario, employ this strategy in the pricing of the residential parking permits. Table 2 summarizes the pricing structure in these cities.

**Table 2 Annual Residential Parking Permit Prices in Alexandria, VA and Toronto, ON, Canada**

City	Annual permit prices for residents <i>without</i> on-site parking (per household)			Annual permit prices for residents <i>with</i> on-site parking (per household)		
	1 <sup>st</sup> permit	2 <sup>nd</sup> permit	Additional permits	1 <sup>st</sup> permit	2 <sup>nd</sup> permit	Additional permits
Alexandria, VA	\$15	\$20	\$50	\$15	\$20	\$50
Toronto, ON (See notes)	\$109.20 Canadian	\$231.12 Canadian	\$231.12 Canadian	\$321 Canadian	\$321 Canadian	\$321 Canadian

## SE Baltimore Transportation Systems Study: Recommendations

### Notes:

1. In Toronto, the number of permits issued is limited to the number of spots actually available on a given street or group of streets, so each permit holder is guaranteed a spot. A waiting list for permits is kept, if necessary, but is only open for those without on-site parking. If demand is high, those with on-site parking are not issued street permits. Each street is inspected before RPP is instituted there and a central database is created of the amount and type of off-street parking available at each address.
2. Fees in Toronto will rise in June 2005. New rates are not yet known.

Sources: [http://alexandriava.gov/city/tax\\_guide/7\\_5.html](http://alexandriava.gov/city/tax_guide/7_5.html) and <http://www.city.toronto.on.ca/transportation/onstreet/index.htm>, as well as telephone conversations with the Alexandria Treasury Division and the City of Toronto Permit Parking Office on May 6, 2005

### b. CAR SHARING

Car sharing programs are designed to meet the needs of those who have occasional need for an automobile, and exist in a number of U.S. cities including Washington D.C. and Philadelphia. Preliminary results, gained from small studies in a number of other U.S. cities, suggest that car-sharing programs do have a real effect on auto ownership and VMT. The percentage of participants who sold a personal vehicle during the studies ranged from 14-29 percent, with 25-67 percent forgoing a personal vehicle purchase during the period of the study. VMT reductions were as high as 23 miles per day for participants in CarLink II, a commuter-based carsharing research program in Palo Alto (Shaheen and Rodier, 2005). In Portland (Cooper et al, 2000), participants who sold a personal vehicle during the study reduced VMT by 25 percent. In Philadelphia (Lane, 2005), those who sold a personal vehicle reduced VMT by several hundred miles a month, while those that had not previously had access to a car gained mobility and increased their VMT by a much lesser amount, an average of 29.9 miles per month.<sup>5</sup>

### c. RESTRAINING PARKING SUPPLY

A number of cities have imposed restraints on downtown parking supply to encourage higher density development and transit use. These restraints may take the form of taxes on parking spaces, reduced minimum parking space requirements, the imposition of maximum parking allowances, or prohibiting new parking facilities in an area.<sup>6</sup>

---

<sup>5</sup> *First Mile: Innovations to Extend the Reach of Transit*, Vol. 1, No. 1, published by WestStart-CALSTART and available at [http://www.calstart.org/programs/cm/FMN\\_Vol\\_1\\_No\\_1.pdf](http://www.calstart.org/programs/cm/FMN_Vol_1_No_1.pdf).)

<sup>6</sup> See the section on negotiated agreements in the *Policy Tools* paper for a discussion of Minneapolis' program to manage downtown parking. Other cities with parking restraints include Portland, Oregon and Boston.

## SE Baltimore Transportation Systems Study: Recommendations

### ***Recommended Actions***

The overall objective is an improved balance between supply and demand for parking spaces. To this end, we recommend actions to decrease demand as well as actions to increase parking capacity, both real and effective. For example, more efficient use of existing off-street parking means that fewer new spaces are needed, resulting in denser and more pedestrian-friendly land uses. Pricing of on-street parking to reflect its scarcity and separation of off-street parking fees from property rent/sale prices, will make the cost of parking more visible to drivers, and will reduce the subsidies paid by non-drivers (either through taxes or higher prices<sup>7</sup>) for parking spaces that they do not use. These new parking approaches will encourage residents of the southeast to try alternative transportation options, benefiting BCDOT's goal of sustainable development (#6). These actions all serve to address the significant parking concerns shared by southeast citizens, businesses, and developers, and can lead to a better balance between parking supply and demand.

Recommendation actions to address parking issues are:

#### **a. ANALYZE AND ADDRESS TARGETED PARKING HOT SPOTS**

This is an important supporting step that should precede any significant revamping of parking policy and can complement a number of the other opportunities discussed here. We recommend that the City:

- inventory on- and off-street parking in areas that have apparent parking shortages or other issues, as well as investigate demand, turnover, and rate of violation of parking regulations. This effort should include collecting area-specific quantitative data about parking supply, demand and violations in the southeast. This will allow the City to evaluate options for changing parking policy, including such dimensions as supply, regulations and pricing with the confidence that policies are comprehensive and defensible within the context of the overall vision for Baltimore and are at the same time location-appropriate. Since changes in parking policy can have far-reaching (and sometimes unintended) impacts on key factors such as auto ownership rates, transit use, residential/commercial sales and rental prices, it is important to have more data before making substantive programmatic changes.

#### **b. DECREASE DEMAND FOR PARKING**

To address the factors increasing parking demand and the accompanying parking shortages and traffic congestion, Volpe recommends the following three actions:

---

<sup>7</sup> Provision of "free" parking can be a substantial cost of doing business in areas where land values are high, a cost that is likely to be passed on to customers in the form of higher prices.

## SE Baltimore Transportation Systems Study: Recommendations

- **Design the residential parking permit (RPP) program to discourage high vehicle ownership.** The pricing structure for residential decals and household visitor permits can complement other efforts to decrease auto ownership in Baltimore. We suggest that the City:
  - ❖ Change the pricing of residential parking decals so that second (and subsequent, if allowed) stickers are significantly more expensive than the first, and
  - ❖ Expand to more neighborhoods the policy of limiting on-street RPP decals more strictly for households with access to on-site off-street parking, or of pricing them higher for these households.

Benefits for Baltimore are likely to include:

- ✓ “Fair” allocation of scarce spaces among residential households,
- ✓ Possible lower car ownership rates over time, and
- ✓ Revenue (in the short term, before car ownership rates begin to decline).<sup>8</sup>

It is important to note that some parts of the existing pricing structure of Baltimore’s RPP program are very progressive and should be preserved. Selling resident decals and visitor permits separately means that households not purchasing a resident permit can still provide parking for their visitors. Preserving parking options for guests of households that have sold their own cars removes one possible barrier to reducing auto ownership. The next recommendation provides another way to discourage car ownership:

- **Introduce a car-sharing program** to complement a strong transit strategy by giving residents and employees the flexibility of occasional access to a car, while reducing the total number of cars competing for parking. Car-sharing programs are designed to meet these occasional needs, enabling residents to own fewer vehicles. In a car-sharing scheme, vehicles are placed at various locations around the city (often near transit stops). Residents join the program for a small fee and can rent these vehicles by the hour. This strategy includes two stages:
  - ❖ Determine feasibility of a car-sharing program for the southeast, and
  - ❖ Implement such a program.

Benefits will include:

---

<sup>8</sup> Increased fees will mean increased revenue in the short term. However, resident pressure may require the City to guarantee that this money will be dedicated to the neighborhood that it came from, so it may not be available to the general fund.

## SE Baltimore Transportation Systems Study: Recommendations

- ✓ Reducing the demand for on-street parking by allowing residents to own fewer vehicles.
  - ✓ Residents who only need a car occasionally save money compared to the cost of car ownership or traditional daily rental.
  - ✓ Increased constituency for transit improvements within the city and the southeast in particular, as transit ridership rises.
  - ✓ Total vehicle miles traveled (VMT) in the city are likely to decrease, contributing to reduced congestion and improved air quality.
- **Limit construction of off-street parking and encourage developers and commercial and residential landlords to separate its cost from that of office/living space.** In parking policy, there is a delicate balancing act. Provide too little parking, and the problems are obvious. However, if too much parking is provided, it may make for lower residential and commercial densities, and thus a less attractive pedestrian environment. The plentiful parking and lower densities may also undercut efforts to encourage use of public transit. As a long-term strategy, we therefore recommend capping construction of new off-street parking spaces, or assessing a fee for building them. Similarly, we recommend encouraging developers/owners to separate parking fees from residential or commercial unit sales prices or rental charges to make the cost of parking more visible to motorists. Where parking is difficult to find, or expensive, people will look more closely at alternative modes of transportation for their trip.

With a mode shift comes not only decreased demand for parking but also decreased traffic. In particular, limiting off-street parking construction downtown could help control commuter traffic through the southeast. The effects of such traffic were priority concerns of residents of the northern part of the study area as expressed during Volpe's study. As an added benefit, reducing the percentage of downtown employees with access to a car at lunchtime/breaks will increase foot-traffic to local small businesses.

### c. INCREASE PARKING CAPACITY (REAL AND EFFECTIVE INCREASES)

Construction of new parking capacity can be expensive and, as explained in the prior section, may undercut efforts to encourage use of alternative transportation. That said, modest increases in parking supply may be appropriate in a few locations. Several low-cost options are available to increase real parking supply (the total number of spots in the southeast) and effective parking supply (the number of spots available for, known by, and attractive to a particular driver with a particular trip purpose). We recommend the following actions:

- **Increase on-street parking supply selectively via angle conversions.** Several streets in the southeast have multiple travel lanes but carry traffic volumes far below capacity. One travel lane can be combined with the

## SE Baltimore Transportation Systems Study: Recommendations

current parallel parking lane and converted into an angle-parking lane with more spaces.

Benefits will include:

- ✓ An increase in the number of spaces of 10-100 percent, depending on the width of the street and the angle chosen, and
- ✓ A possible reduction in traffic speed, resulting from the removal of a travel lane. (The remaining lane will be running closer to capacity, and opportunities for passing are reduced or eliminated; therefore it can be expected that motorist speeds will decrease.)

Table 3 illustrates the number of parking spaces and minimum street width required for a 200-foot block.<sup>9</sup>

**Table 3 Street Space for Various Parking Configurations**

Configuration	Minimum Street Width (feet)	Parking Spaces
Parallel	18	9
30 degree angle	26	11
45 degree angle	30	16
60 degree angle	37	19
90 degree angle	43	23

- **Improve use of existing off-street parking spaces.** There are a number of off-street garages and surface parking areas in the southeast, which are sometimes underutilized, at the same time as citizens complain about apparent shortage of parking. Actions to improve use of existing off-street parking represent opportunities to increase the area's effective parking capacity while decreasing the need to build costly new garage spaces. Two main types of underutilization can be addressed:
  - ❖ Work to establish partnerships to share private off-street parking. Lots belonging to private businesses/organizations and public lots dedicated to a particular use (e.g., for a public library) are often empty when that business, organization, or building is closed. Since adjacent land uses often have different periods of peak parking demand, an arrangement whereby the parking area is shared can increase utilization of the lot throughout the day and week and thus decrease the need for additional spaces. In particular, the residential parking crunch could be ameliorated if businesses allowed local residents to use the business's lot or garage overnight. Volpe recommends that the City:

---

<sup>9</sup>Weant and Levinson, 1990, Figure 11-7

## SE Baltimore Transportation Systems Study: Recommendations

1. Work to encourage establishment of informal or formal partnerships among landowners (and with residents) to share existing off-street spaces, and
  2. Encourage developers to consider this option from the planning stages for new construction.
- ❖ Encourage use of off-street public lots/garages. General-use public garages in commercial areas are often underutilized, while on-street parking is oversubscribed. Reasons for this likely include: (a) visitors to the city cannot readily locate the garages, and (b) drivers perceive off-street parking rates as much higher (though the difference may in some cases be slight). To address these two factors, Volpe recommends that the City:
1. Improve signage to off-street parking, and
  2. Establish uniform fees for on-street and off-street parking (increase the price of on-street parking to more accurately reflect its convenience and scarcity).
- **Expand and strengthen the RPP program to address spillover.** To complement these measures, the RPP program should be expanded and strengthened to address spillover that may result if commercial area on-street rates are increased. We recommend that the City:
- ❖ Expand the RPP program to cover more neighborhoods, especially those near commercial districts, and
- ❖ Increase enforcement of RPP.

This will preserve parking options for residents while strengthening the effectiveness of the City's actions to increase business customer utilization of off-street parking.

### ***Implementation***

A number of actions to reduce demand for parking and to increase parking capacity appropriately may work well if integrated into a TDM program. We expect that these actions will work better and be easier to implement in that context, and we strongly encourage the City to look for connections among recommendations where possible.

Recommended implementation plans for this category are as follows:

#### **a. ANALYZE AND ADDRESS TARGETED PARKING HOT SPOTS**

The Parking Authority for Baltimore City (Parking Authority) is the lead for this activity. BCDOT may want to offer input on targeting on-street parking locations, while BDC and the Planning Department may have suggestions as to

## SE Baltimore Transportation Systems Study: Recommendations

what off-street parking areas/issues warrant focus.<sup>10</sup> The level of effort depends upon the scale of study, both geographically and in terms of depth of investigation.

### b. DECREASE DEMAND FOR PARKING

Actions to reduce parking demand will not be fully effective unless suitable alternative transportation options are also available. The MTA needs to offer attractive routes and schedules, while the street/sidewalk environment needs to be inviting and safe for pedestrians and bicyclists. Ridesharing programs for commuters to downtown can help. Therefore, redesign of RPP, establishment of a car-sharing program, and limitation of construction of new off-street parking facilities are best undertaken along with the actions recommended for improving alternative transportation in the southeast. The City will need to work with MTA to ensure that attractive transit options are available to handle new riders. Key components of decreasing demand for parking include:

- **Designing the RPP program to discourage high vehicle ownership**, led by the Parking Authority. Variations among neighborhoods are important and each area will continue to require a slightly different strategy. In particular, re-pricing of the RPP program first requires detailed determination of vehicle ownership. A review of RPP decal sales records will reveal how many multi-vehicle households are currently using on-street parking in each neighborhood. Implementation itself will not require much labor, as it will consist mostly of changing public information/application forms, but may require some political capital and outreach.
- **Introduction of a car-sharing program** should be led by the BCDOT, through the transportation planning staff person or the TDM coordinator. Tasks for determining the feasibility of establishing a successful car-sharing program in the southeast include further investigation of the number of area residents who are likely to sign up, the adequacy of alternative transportation options for everyday trips, and the interest of existing car-sharing firms in expanding to Baltimore. (Those operating in Washington, D.C., where some Baltimoreans may already have memberships, may be a good place to start.) The City's legal staff may be needed to negotiate with car-sharing companies. The Parking Authority may need to contribute several dedicated parking spots in municipal garages as "home" for the shared cars. Private businesses with large lots in the southeast (e.g., the Safeway on Boston Street), may also be willing to provide a dedicated parking space, as this will increase foot traffic and goodwill and help bring in customers.

---

<sup>10</sup> (See *Parking Authority Working Group Actions* for a list of specific comments about parking received from stakeholders during Volpe's Southeast Study.)

## SE Baltimore Transportation Systems Study: Recommendations

If a car-sharing program proves successful, the Planning Department may want to explore codifying incentives (or even requirements) for provision of parking spaces for shared cars into permitting rules for large new developments.

- **Efforts to limit construction of new off-street parking**, and encourage changes in the way that it is priced, will be led by BCDOT's TDM coordinator and the Parking Authority, working with BDC (to explain the rationale to developers) and the City's Planning Department (to coordinate changes in regulations, if needed). Tasks involved include clearly presenting to the development community this initiative's potential to address congestion, and then planning/implementing new zoning or other regulations or incentives as necessary to put it into place. Restricting construction of new parking downtown will require convincing the Downtown Partnership of Baltimore that this will not reduce downtown's competitiveness. This is therefore a long-term strategy to approach gradually, especially after transit improvements are in place. Working with developers to encourage separate pricing of parking may be an intermediate step.

### c. INCREASE PARKING CAPACITY (REAL AND EFFECTIVE INCREASES)

- **Determine the best locations and design of angle conversions** needs to be led by the BCDOT. Implementation on a given street requires reviewing resident requests for this change for appropriateness and, if the conversion is approved, planning and implementing the new surface striping and signage. The process for requesting, deciding upon, and implementing angle-parking conversions is already in place. However, over the medium or long term it might be preferable to establish a more systematic process for identifying streets to convert, possibly tying eligibility to a street's designation within a multi-modal street classification system.
- **Improve the use of existing off-street parking spaces** should be accomplished by:
  - ❖ Establishing partnerships to share private off-street parking - which requires investigating adjacent land uses to find appropriate candidates for these partnerships, and making the case to the owners. The Parking Authority may be able to help locate potential sites for inter-business pairings. For the case of opening business garages to residents at night, interested residents, working with the Mayor's Office of Neighborhoods, would approach the Parking Authority with suggestions for sites, and the Parking Authority and the Office of Neighborhoods would work to bring the business and residential communities together. It is important to keep in mind that, before

## SE Baltimore Transportation Systems Study: Recommendations

agreeing to share parking, owners may need to review with their insurers possible liability issues related to inviting others onto their property.

Encouraging developers to pursue parking partnerships for new construction – which may be done by providing incentives. If these were established, they would be administered by the Planning Department. In its role as advocate for current residents, the Planning Department can negotiate with developers to open the parking of new development to the neighborhood at night, in exchange for the developers' removing several existing neighborhood parking spaces. Several recently approved projects by Streuver Brothers and at Johns Hopkins already plan such partnerships, which came out of negotiation with surrounding neighborhoods.

- ❖ Encourage use of off-street public lots/garages – which requires varied amounts of effort. Installing new signage is not complicated and can be done in a short time frame by BCDOT, although it will require some labor. The Parking Authority will administer increasing the price of on-street parking through determining an appropriate fee, while BCDOT's Maintenance Division will be responsible for reprogramming/relabeling all affected meters and EZ Park machines. Successful implementation will require finding the right unified parking fee structure, which will have the desired effect of encouraging use of public garages but will minimize unintended consequences, such as spillover into residential areas. A parking study will be key to looking at localized tradeoffs associated with various policy options.
- Neighborhood groups in the southeast can help the Parking Authority determine where to **expand the RPP program**. Where is spillover from commercial districts a problem? Where is that problem likely to grow? Although starting with residents' perceptions helps, hard data will be necessary, especially looking towards the future effects of possible changes to parking prices in commercial areas. A more detailed demand analysis could be a part of a larger parking study, as presented above, that would also look at supply. As with restructuring the pricing of the RPP program, the majority of effort will be for outreach to and negotiations with neighborhoods, while actual implementation will be relatively simple. Increased enforcement of RPP may require hiring additional parking enforcement agents or redeploying existing ones.

## **E. Alternative Transportation**

### ***Findings***

Alternative transportation (which includes public transit, walking and bicycling) in the southeast can potentially play a major role in improving the current transportation system. As the area continues to develop and pressures on the system increase, concerns centered on traffic congestion, parking availability, and pedestrian safety will grow as more and more cars squeeze onto the road. Alternatives to driving in the southeast include the MTA's bus service, bicycle routes (albeit limited), and sidewalks and the waterfront promenade for pedestrians. Stronger interagency coordination between the BCDOT and MTA is required to evaluate the current system effectively and determine what improvements can be made (see "Government Relations" section of this report). In previous years, the BCDOT and MTA held regularly scheduled meetings to coordinate activities. These meetings should begin again, especially as leadership changes occur, and take advantage of the analyses and recommendations of this study.

According to the 2000 Census, 17 percent of home-to-work trips originating in the southeast were on transit. An increase in this percentage would help to alleviate pressures on the transportation system by reducing the number of private vehicles on the streets. The MTA bus service offers a variety of routes throughout the southeast and toward the central business district; however, many residents are dissatisfied with the service. Feedback collected during this study shows that stakeholders in the area are concerned with the system's reliability, efficiency, and safety, as well as with the effectiveness of current routes. Many residents think that too many bus stops are underutilized, and many of them are poorly placed on intersections or near hills and blind curves, making them dangerous for alighting passengers. Improvements will help increase ridership, and therefore revenues. Increased ridership will also increase the size of the transit constituency, making further enhancements politically easier.

Pedestrian and bicycle alternatives are also available. The BCDOT is currently developing a Bicycle Master Plan, which will help determine alternative routes and improve road conditions for bicyclists. Pedestrian mobility, safety, and security also need to be addressed to ensure that sufficient time is allowed to cross the street and that the environment throughout the southeast is safe and secure for walking both during day and evening hours.

### ***Recommended Actions***

Alternative transportation should be promoted in the southeast and throughout the city not only to meet the needs of non-drivers, but also to ease the pressures being placed on the transportation system by rapid development.

## SE Baltimore Transportation Systems Study: Recommendations

### a. IMPROVE TRANSIT CONDITIONS THROUGH BCDOT ACTIVITIES

The BCDOT can initiate several changes to help improve alternative transportation options in southeast Baltimore.

- **Reassess bus stop placement** to decrease the number of underutilized stops and improve stop effectiveness. If there are unnecessary stops, removing them will improve bus running times and increase availability of on-street parking spaces. Many residents also believe that some stops are poorly placed and may be dangerous for alighting passengers; moving stops may therefore increase safety. The MTA's Comprehensive Bus Study will initially address these issues, but because the BCDOT has jurisdiction over the roads, BCDOT should work with MTA to ensure optimum placement of stops and encourage changes based on citizens' feedback.
- **Continue to evaluate both the reality and perception of safety and security, and work to improve conditions where needed.** Determining pedestrian and transit rider concerns specifically (e.g., type, time of day, location) can clarify the issues and allow a targeted response. The Police Department is currently working to collect and evaluate crime statistics to assess relative risks in and around transit stops. This can lead to improved security where needed (for example, the Police Department is taking steps to install cameras in some locations to discourage drug activity) and can also lead to improved communication to the public to reduce fears where risk is actually low. BCDOT should work with the Police Department to discuss existing issues, and to improve coordination with the MTA.
- **Institute workplace-based incentives to use transit as part of a TDM program.** Incentives may apply to workplaces both in the southeast and downtown and may include pre-tax purchases of transit passes, incentives to use transit instead of parking, sheltered waiting areas, and Guaranteed Ride Home programs. BCDOT's TDM manager should first coordinate with the BDC or pre-determined business consortiums to determine how incentive-based programs should be marketed to businesses (e.g., through TMAs, City outreach).
- **Provide shuttle services that are short, simple, frequent transit routes connecting a simple, well-defined set of origins and destinations.** Routes may operate with smaller buses on the roads or with boats along the waterfront. Operating shuttles at specific time periods may also be appropriate for particular routes near popular destinations. These shuttle services can be funded by TMAs or by specific large employers or developers such as Johns Hopkins or Streuver Brothers. Possible routes include
  - ❖ Along Broadway between Johns Hopkins and Fells Points
  - ❖ A water shuttle operating between Canton and the Inner Harbor

## SE Baltimore Transportation Systems Study: Recommendations

These activities will encourage transit use, resulting in less congestion and more efficient travel in and around the southeast. Benefits will include:

- ✓ Improved transit performance, expanded options, and more consistent ridership,
- ✓ Improved traffic flow and fewer parking shortages resulting from fewer trips in privately-owned vehicles,
- ✓ More transit issues addressed and improved rider morale by enhanced coordination with MTA, and
- ✓ Expanded access to employer-based transit benefits.

### b. IMPROVE TRANSIT THROUGH MTA ACTIVITIES

Several improvements to the bus system are necessary to create more reliable service in the southeast, and fall within the MTA's jurisdiction and operating responsibility. The opportunities described below are designed to improve service and are based on feedback collected from stakeholders during the Southeast Study. (The document *MTA Working Group Actions* contains more details on specific changes suggested by stakeholders.) Such information should continue to be shared with the MTA during regularly scheduled interagency meetings. These comments should also be followed-up on jointly by BCDOT and MTA who will both benefit from having a more efficient and effective system in the southeast that continues to attract riders.

- **Simplify bus routes**, especially long ones with few through riders and routes with a number of different branches, to improve reliability and optimize utilization. Some MTA bus routes are very long and may have few through-riders. In addition, routes such as the #13 have a number of different branches that may be particularly confusing to new riders. Simplifying these routes would serve target destinations better. Shorter routes may have improved on-time performance, provided that there is enough layover time at each end while still limiting the opportunity for delays to build as the routes continue. Schedules and maps also need to be simpler and easier for riders to understand.
- **Plan service systematically** to keep up with evolving travel needs. While the results of MTA's Comprehensive Bus Study should prove quite useful, an ongoing program of tracking ridership, development, and other trends will help the MTA address the ever-changing needs of its customers. By systematically planning, improved service changes may attract new riders and make more efficient use of transit funding.
- **Create exclusive rights-of-way** for transit to avoid competition with cars and trucks and to ensure reliable service with good running times. In other words, continue to work to make the Red Line a reality. This transit

## SE Baltimore Transportation Systems Study: Recommendations

option, be it light rail or bus rapid transit, may include park-and-ride facilities to the east of the study area. While this is a very long-term plan, shorter-term changes to transit, such as new bus alignments, may be seen as trials for potential routings of the Red Line. They can help to test potential ridership and to build enthusiasm among residents/commuters that transit service is already improving. However, an inadequate, poorly utilized service may actually weaken support for the Red Line.

Use transit signal priority in surface transit corridors. A well designed priority scheme can substantially improve transit running times while having a minimal impact on cross-street traffic. Conditional priority (where a transit vehicle is given priority if it is running late) can also help to improve service reliability.<sup>11</sup>

The benefits stemming from improved operations of the buses will include:

- ✓ Increased ridership;
- ✓ Improved public perception of transit services; and
- ✓ Increased effectiveness and efficiency of transit service, with more direct routes and competitive travel times.

### c. IMPROVE CONDITIONS FOR PEDESTRIANS AND BICYCLISTS

As future developments in the southeast are completed, the street environment needs to better accommodate pedestrians and bicyclists who travel throughout the area and to and from downtown. The following activities will be instrumental in assessing and meeting these needs:

- **Use data collection and analysis to monitor and improve conditions, and improve collaboration with the Police Department to identify safety and security hotspots.** Maintenance needs especially relevant to pedestrians and bicyclists (e.g., poor sidewalk conditions, pot holes) should be collected from 311 calls. The BCDOT Bicycle Master Plan should also be referenced when analyzing conditions and specific routes. Although the small number of pedestrian and bicycle crashes makes statistical analysis difficult, data on these crashes is still useful for monitoring conditions and researching citizen comments and should be obtained from the Police Department.
- **Develop land use policies that are supportive of non-motorized travel** through city-wide programs focusing on multi-modal networks and bicycle master plans. Similar efforts can be designed for pedestrians, to recognize and designate pedestrian-friendly routes. Specific plans can be incorporated into the zoning/development process and take into account

---

<sup>11</sup> Smith, Scott B, "Transit Planning and Intelligent Transportation Systems," paper presented at the 10<sup>th</sup> TRB Transportation Planning Applications Conference, Portland Oregon, 2005.

## SE Baltimore Transportation Systems Study: Recommendations

factors such as density, bike amenities, efforts to encourage and retain ground-floor retail, and design guidelines.

- **Build infrastructure to support non-motorized transportation.** To improve conditions for cyclists, the city should designate bike routes, supply bike racks, and replace bicycle-hazardous street grate designs as soon as practical. Pedestrian count-down signals, bulb-outs and access ramps should be introduced to facilitate pedestrian street-crossings. These efforts can coordinate with the existing Main Streets program to incorporate further pedestrian enhancements. See also the *Short-Term Actions Document*, which details specific locations for short-term BCDOT-controlled improvements, including a number that relate to improved pedestrian environment and safety.
- **Develop education and community programs that support safety and TDM initiatives.** These could include educational campaigns (in conjunction with installation of new countdown signals or completion of the bike master plan), school based programs (e.g., safe routes to school), and fitness-based efforts to encourage walking (e.g., pedometer challenges) The BCDOT Safety Division's program currently employs three individuals to make pedestrian safety presentations at elementary and middle schools; this is an excellent step towards outreach and can perhaps provide a model for other new initiatives.

Improvements for pedestrians and bicyclists will benefit the transportation network and southeast residents by:

- ✓ Encouraging means of travel that are less car-dependent, leading to reduced traffic, congestion, and parking shortages, and
- ✓ Improving safety and overall security  
In addition, improvements for pedestrians and cyclists will:
- ✓ Increase awareness of the health benefits of walking and biking and facilitate a healthier Baltimore, and
- ✓ Provide greater support for local commercial districts and develop stronger neighborhood cohesion.

### ***Implementation***

Improved alternative transportation options, and their promotion will need to be jointly addressed by BCDOT, MTA and other possible transportation providers. The business and development community should also become active participants in addressing alternative transportation issues and can be coordinated through BDC or the existing business consortiums. While MTA may own the buses, the City needs to identify more ways to work actively with MTA and also pursue independent efforts in support of alternative transportation. While all of the mechanisms described above provide improvement opportunities, they focus on a

## **SE Baltimore Transportation Systems Study: Recommendations**

range of approaches, each requiring different levels of staff/agency support, funding, and maintenance, including:

### **a. IMPROVE TRANSIT CONDITIONS THROUGH BCDOT ACTIVITIES**

These activities all require further funding, staffing, and access to adequate data (e.g., ridership, street crime). The challenge with improving transit service is to ensure equity and not to favor the most vocal or demanding areas at the expense of current riders. Therefore, shuttle services funded by large employers, developers, or TMAs are worth pursuing, as this will allow real transit improvements that would not be possible for MTA to fund. BCDOT should continue to work with MTA to make other improvements to routing and scheduling, however, as it will be difficult to increase use of transit until it can be improved and can justify the benefits of riding. A strong marketing/education component should be implemented to encourage employer participation and higher ridership. If implemented, these recommendations are expected to create large payoffs in the long-term by reducing congestion, improving quality of life, and providing efficient transportation options other than single-occupancy vehicles.

### **b. IMPROVE TRANSIT THROUGH MTA ACTIVITIES**

Finding sufficient funds for service improvements continues to be a challenge. Even budget-neutral route and schedule changes are dependent upon MTA funding and staff to support the required research and data collection needed before making changes. With the Comprehensive Bus Study nearing completion, there is a good opportunity to make informed service changes. Improvement to MTA service in southeast Baltimore will lead to better customer satisfaction and ultimately improved farebox recovery stemming from increased transit use. In addition, improved transit options will facilitate implementation of a number of other recommendations (such as those to decrease auto ownership) described in other parts of this document.

### **c. IMPROVE CONDITIONS FOR PEDESTRIANS AND BICYCLISTS**

Dedicated BCDOT staff responsible for addressing alternative transportation issues are needed to boost programs that are often considered secondary to meeting the needs of motorists. Table 4 shows that many of the strategies to improve conditions for pedestrians and bicyclists overlap with strategies identified in other sections of this document. Awareness of these areas of overlap can help to minimize the *new* efforts required to enhance the pedestrian and cyclist experience. Projects involving improvements to infrastructure will either require a dedicated effort or increased funding of existing efforts to improve pedestrian/bicycle infrastructure, such as the Main Streets program.

## SE Baltimore Transportation Systems Study: Recommendations

**Table 4** Overlap of Pedestrian and Bicycle Strategies with Other Initiatives

Action described in this section of this document	Agency	Related recommendations	Related Sections
Collect Data	Police, BCDOT	Track Safety and Security issues	Government Relations
	BCDOT	311	
Develop Land Use Strategies for Non-motorized Travel	BCDOT	Roads as Multi-modal Networks	Roads
		Zoning/Development Process	Planning/Land Use
Build Infrastructure for Non-motorized transportation	BCDOT	Street System Management Plan	Roads
Develop Education and Community Programs	BCDOT, BDC	TDM	Government Relations

**Baltimore City DOT's Strategic Goals**  
**May 2003**

- 1:** Develop a world-class transit system capable of connecting communities
- 2:** Modernize the transportation system to meet future needs
- 3:** Provide access and mobility for people and goods
- 4:** Ensure optimum safety and security throughout the transportation system
- 5:** Support the economic development of Baltimore
- 6:** Support sustainable development of the region and the preservation of Baltimore's cultural, social, and natural resources
- 7:** Improve quality and quantity of information communicated among all regional transportation stakeholders
- 8:** Establish a sound and adequate funding base for transportation operations, maintenance and investment